

The invention claimed is:

1. A thermoformable acoustic sheet material comprising:  
a barrier layer of fiber having an area weight of from about 40 grams per square foot to about 100 grams per square foot; and  
an absorber layer of vertically-lapped fiber, the absorber layer having an area weight of from about 25 grams per square foot to about 100 grams per square foot and a thickness of at least about 15 millimeters.
2. The thermoformable acoustic sheet material of claim 1, further comprising a polymer film layer disposed between the barrier layer and the absorber layer.
3. The thermoformable acoustic sheet material of claim 1, further comprising a scrim layer disposed between the barrier layer and the absorber layer.
4. The thermoformable acoustic sheet material of claim 1, wherein the barrier layer has an airflow resistance from about 200 to about 300 Rayls.
5. The thermoformable acoustic sheet material of claim 1, wherein the absorber layer has an airflow resistance less than 100 Rayls.
6. The thermoformable acoustic sheet material of claim 1, wherein the barrier layer is a carpet.
7. The thermoformable acoustic sheet material of claim 1, wherein the fibers of the barrier layer are vertically-lapped, air-laid, cross-lapped, or needle-punched.
8. The thermoformable acoustic sheet material of claim 1, wherein the fibers are comprised of polyethylene terephthalate.

9. The thermoformable acoustic sheet material of claim 1, wherein the fibers of the barrier layer are vertically-lapped, the barrier layer has an airflow resistance of from about 200 to about 300 Rayls, and the absorber layer has an airflow resistance of less than 100 Rayls.
10. The thermoformable acoustic sheet material of claim 1, further comprising an impermeable polymer film disposed between the barrier layer and the absorber layer.
11. The thermoformable acoustic sheet material of claim 1, wherein the barrier layer is a carpet, the absorber layer is a vertically-lapped fiber layer having an airflow resistance of less than 100 Rayls, and the absorber layer and barrier layer are attached to one another without an intervening polymer film or scrim layer.
12. A molded acoustic panel made of the thermoformable acoustic sheet material of claim 1.
13. A vehicle including the molded acoustic panel of claim 12.
14. The vehicle of claim 13, wherein the molded acoustic panel is a dash acoustic insulation panel, an acoustic carpet system, an acoustic insulating trunk underlayment, a wheel house acoustic insulation panel, or a door acoustic insulation panel.
15. A thermoformable acoustic sheet material comprising:
  - a barrier layer of fiber having an area weight of from about 40 grams per square foot to about 100 grams per square foot;
  - an absorber layer of fiber having an area weight of from about 25 grams per square foot to about 100 grams per square foot and thickness of at least about 15 millimeters; and
  - an impermeable polymer film layer disposed between the barrier layer and the absorber layer.

16. The thermoformable acoustic sheet material of claim 15, wherein the barrier layer has an airflow resistance from about 200 to about 300 Rayls.
17. The thermoformable acoustic sheet material of claim 15, wherein the absorber layer has an airflow resistance less than 100 Rayls.
18. The thermoformable acoustic sheet material of claim 15, wherein the fibers of the barrier layer are vertically-lapped, the barrier layer has an airflow resistance of from about 200 to about 300 Rayls, and the absorber layer has an airflow resistance of less than 100 Rayls.
19. The thermoformable acoustic sheet material of claim 15, wherein the polymer film layer is impermeable.
20. A molded acoustic panel made of the thermoformable acoustic sheet material of claim 15.
21. The thermoformable acoustic sheet material of claim 15, wherein the impermeable polymer film layer is polyolefin film having an airflow resistance not less than 5000 Rayls.